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Abstract

5-YEAR OPERATION EXPERIENCE ON THE FAST REACTOR

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Principal results of 5-year operation of sodium-cooled fast reactor BR-5 (nominal power 5000 kw) are given in this report.

Reactor operation affter achieving the design burnup (2%) sith some fuel elements being untight is described. The results of contamination analysis of coolant, technological equipment and pining surfaces, and reactor gas blanket by fission products are given. Information on the main technological equipment operation is reported. Untightness that took place in some fuel elements was shown not to result in any appreciable difficulties during the operation of predesigned systems.

Special devices for investigation (during reactor operation) of fission products released into coolant and reactor gas blanket, and their deposition over pipe inner surfaces are deseribed. Spectrometric analysis indicated the residual radioactivity of primary coolant to be caused by Cs^{137}. It is pointed out that coolant contamination may be decreased by means of cold traps.

The experiments conducted proved that only inert gases (Xe and Kr isotopes) were released during reactor operation into gas blanket. Iodine was not detected.

The results of radiochemical examination of coolant and

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deposits (on pipe inner surfaces) sampling are given. The results of investigation of plutonium oxide fuel elements with burnup more 5,5%.are described, the causes of fuel element canning rupture are analyzed.

Some results of the kinetic study by means of step-function method are described. The results are compared with the oscillation method data obtained. Transient characteristics of power to reactivity for different coolant flow rates were obtained.

Some uranium monocarbide fuel elements were loaded into the reactor BR-5 core to pass to a new fuel material by the end of I964.